temperature was under observation nine days; the others were not examined after the third. Then, specimens of fresh buttermilk containing all its bacteria were planted and kept under the same conditions, and from them the same results were obtained. Yet there was this difference, that there was always a diminution in the number of the pathogenic organisms, and this was more marked, and sometimes very rapid, with increasing temperatures.

How the Color of Drinking-water Due to Humin Substances may be Influenced by Iron Compounds.—W. Spring (*Chemisches Centralblatt*, 1898, i. 410) advances as a result of some observations on the color of drinking-waters an explanation of the influence of iron salts. Mixing brown peaty water with dilute solution of ferric salts, it will be noticed that the color is at first dark, but under the influence of light becomes less and less so, and meanwhile a precipitate settles out. The humin substances are oxidized and unite to form insoluble compounds with metallic oxides. In this process the ferric are reduced to ferrous compounds having insignificant color, but the latter are soon again oxidized to ferric, and then resume the separation of the organic coloring. He likens the function of iron in the purification of water to that of the hæmoglobin of the blood.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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Cancer of Œsophagus with Involvement of Heart and Lung.—Bureau (*Bull. Soc. Anat. de Paris*) reports the above condition in a man, fifty years of age, emaciated and cachectic, with pain on swallowing, and vomiting, which only once showed the presence of blood. Later a pleurisy developed and 500 c.c. of fluid were withdrawn. Sputum became fetid. Tachycardia was observed, the pulse on one occasion being 160. Post-mortem examination showed a constricting cancerous growth of the œsophagus with ulceration and perforation into the middle lobe of the right lung. The œsophagus was adherent to the left auricle of the heart with projection of the growth into this cavity, and there was a formation of cancerous nodules the size of a pea on the endocardium. The muscular fibres of the heart were atrophied and also infiltrated with cancer cells. The left inferior pulmonary vein was compressed by the growth, as was also the right pneumogastric nerve. Histological examination of the growth showed it to be an epidermoid cancer.

The Pathology of Tabes Dorsalis.—In an exhaustive monograph on the pathology of the spinal cord changes of locomotor ataxia, Redlich presents a critical review of the literature of this subject, and adds much of interest derived from personal studies of his own, made for the most part in the laboratory of Professor Obersteiner (*Die Pathologie der tabischen Hinterstrangserkrankung ein Beitrag zur Anatomie und Pathologie der Rückenmarkshinterstränge:* Jena, 1897: G. Fischer. Pp. vi. 205).

The work is divided into four parts, devoted respectively to the normal anatomy and histology of the posterior columns, to their pathological changes in locomotor ataxia, to the etiology of locomotor ataxia as gathered from statistics and from clinical studies, and to the pathogenesis of the lesion in the posterior columns incident to the disease.

His studies of the distribution of the structural changes lead Redlich to renounce the theory, advanced by Strümpell, that the lesion of tabes is a system degeneration. The opinion of Flechsig, that it follows the course of the developmental tracts, is also denied, and it is maintained that the first evidences of degeneration are to be found in the posterior roots, and that the degeneration is rather segmental than systemic in its occurrence and distribution.

The part of the posterior roots which seems to be earliest affected is the region of their union with the spinal cord. It is maintained that this region is more liable to injury because of certain peculiarities of its position, and in support of this view the acute angle at which many of the lower sensory roots unite with the cord, and the opportunity thereby afforded for constriction of the roots by the pia, are brought out. Actual meningitis is believed to be the cause of the local degeneration in comparatively few cases, as are also pressure from inflammatory lesions in the neighboring bones or from changes in the bloodvessels at the point of entrance of the roots into the cord. Nor do there appear to be primary changes in the ganglia of the posterior roots, nor in the peripheral nerves. Thus, while Redlich is convinced that the lesion of tabes has its origin in the posterior roots just at their point of union with the cord, and that this is anatomically a *locus minoris resistentiæ*, he is unable to decide what is the precise exciting cause of the change.

As regards a more remote etiological factor syphilis is noted as having been present in 65.2 per cent. of the men (seventy-two), and in 23.4 per cent. of the women (thirty) studied by Redlich. In a few cases other infectious toxic conditions seemed to have taken the place of syphilis as an etiological factor.

The monograph is handsomely illustrated by a number of well-executed plates, and will repay a careful perusal.

Experimental Studies in Cardiac Arrhythmia.—M. Heitler (*Wiener klin. Wochenschrift*, 1898, Nos. 3 and 8). Arrhythmia is a recognized symptom of cardiac disease, but its exact significance has only recently been investigated. The author has made experiments upon curarized dogs, the pulse being recorded in the usual manner upon the kymograph. It was first found that any mechanical irritation of the heart would produce arrhythmia, and that special cardiac regions were more susceptible; for example, the longitudinal sulcus, especially its upper third. Arrhythmia was more intense if the irritation was applied during systole than diastole. Cutting the vagi had no effect upon the arrhythmia following irritation. The lightest touch of the visceral pericardium caused as much arrhythmia as deep stimulation. Cocaine applied to the pericardium overcame the irritation and no arrhythmia resulted. Seizing